Peer Review Request Form

Title: *Characterization of Air Manganese Exposure Estimates for Residents in Two Ohio Towns*

Protocol: _____ **Final Report:** X **Other:** _____

Type of Study: Exposure assessment

Cost Recovery Number: A0JN and A714

Number of Pages (if not attached): Text _____ **Appendices** _____

Suggested Date for Return of Comments: ASAP

If Less Than 2 Weeks, State Reason:

_____

_____

Name/Division/Phone/Fax:
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Potential Sources for Conflict of Interest: N/A

Types of Disciplines Peer Reviewers Should Have:
Air Quality, Exposure Assessment, Air Modeling

Peer Reviewers Previously Used: N/A

Other Suggested Peer Reviewers (website below):
Peter Scheff, PhD; Professor Emeritus, University of Illinois at Chicago, pscheff@uic.edu,
http://www.cade.uic.edu/sphapps/faculty_profile/sphFacultyInd.asp?i=pscheff&d
= (don't forget the = sign at the end of the url-won't hyperlink)

Brief Description (see next page**). {Please submit when the worksheet is forwarded in advance of the completed protocol/final report.}**

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Branch Chief **Date**

_____

Assistant Director for Science **Date**

Abstract

Background: Few available studies evaluate long-term health outcomes from inhalational manganese (Mn) exposure in residential populations, due in part to challenges in measuring individual study subject exposures.

Objectives: The objective of this study was to derive receptor-specific air manganese (air-Mn) inhalation exposures for two Ohio communities with very different emission and source concentration profiles.

Methods: U.S. EPA's AERMOD dispersion model and air measurement data were used to estimate concentrations for resident-specific receptor sites in two study communities. Detailed emissions data from a Mn smelting operation were used for modeling air-Mn in the first community. Since no emissions data were available in the second community near a Mn-ore processing and storage facility, AERMOD was used to calculate a ratio of estimated Mn exposures at receptor sites. The model was then calibrated using measured data from local air quality monitoring stations.

Results: Estimated annual mean outdoor air-Mn exposures for residents were as high as 1.93 $\mu g/m^3$ in total suspended particles (TSP). Exposure estimates were consistent with the range of measured outdoor air-Mn in the communities where air modeling was conducted.

Conclusions: Data from local air monitoring stations can provide the means to calibrate models used in estimating long-term exposure to Mn. Furthermore, this combination of modeling and ambient air sampling can be used to derive these estimates even in the absence of source emission data.